To:

COFORD Working Group

c/o  emer.eagle@teagasc.ie

20th August 2012

**Re:** **Identifying Land Availability for Afforestation and Examining Constraints and Incentives to Achieving Afforestation Goals**

COFORD Working Group:

Thank you for providing An Taisce with the opportunity to input to this consultation on ‘Identifying Land Availability for Afforestation and Examining Constraints and Incentives to Achieving Afforestation Goals’. An Taisce has made a number of recommendations below, which are explained in greater detail in Annex I.

Recommendations:

* Choosing the most appropriate site for afforestation is a key component in whether a plantation is of positive benefit or detriment to the environment as well as the economy and society as a whole. A systematic approach is needed where all sites proposed for afforestation are sufficiently assessed for their conservation interests to the extent that all arms of the state can be satisfied that biodiversity areas shall be protected and managed in keeping with the guidelines.
* A standardised training and qualification system is required of the foresters and forest inspectors to ensure they are only allowing for appropriately located plantations that will not detract from the biodiversity value of the site, nor impact species or habitats of conservation concern.
* More research needs to be done to determine the role of forestry in catchment management and flood alleviation in Ireland in terms of the varying contribution of different species mixes and management systems, their location in the catchment, and comparison with flood alleviation services of other habitat types.
* Greater emphasis should be placed on alternative approaches and opportunities for afforestation to be of benefit of both the environmentas well as the economy. For example, methods such as planting strips of forestry across a wide range of areas, instead of large, isolated plantations can be hugely beneficial as they can act as wildlife corridors.
* The use of mixed species stands should be encouraged as these provide a wide range of benefits as opposed to the monospecific coniferous stands.
* Continuous Cover Forestry (CCF) should become the alternative to the practise of clearfelling.
* Increased training, advice and support for continuous cover management methods to foresters; as well as active incentives and new grant structures for new planting of Continuous Cover Forestry stands is required.
* More research and policy development into the practice of agroforestry is required.
* Greater emphasis should be placed on schemes such as the Native Woodland Scheme, especially with regards to riparian broadleaf woodlands which provide a huge range of benefits, both ecological and economic.
* The development of markets for locally grown timber products is vital to ensure that these woodlands have a positive economic base in order to ensure their continued management.
* Forestry owners should be given incentives to establishing forest owner organisations.
* Viable alternatives to afforestation and support mechanisms for positive land management are crucial for the success of improved biodiversity screening and cessation of planting on high nature value farmland.

If you would like to discuss any of these recommendations any further please do not hesitate to contact Camilla at naturalenvironment@antaisce.org.

Please acknowledge receipt of this submission.

Yours sincerely,

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**Annex I**

Forestry in Ireland is undeniably an important land use with a huge number of benefits to many sectors of society, the economy and the environment. With the Governments Forest Strategy aiming for 17% (1.2 million hectares) forest cover by 2030, increased afforestation across Ireland has been seen across the country (DAFF 1996). While increased afforestation can have positive impacts when planned and managed correctly, often poor planning can lead to detrimental impacts on Ireland’s natural environment, including declines in water quality and loss of valuable habitats and species as well as ecosystem services.

1. **Appropriate site selection for afforestation:**

**Choosing the most appropriate site for afforestation is a key component in whether a plantation is of net benefit or detriment to the environment as well as the economy and society as a whole**. For example, planting in habitats such as improved or semi-improved grasslands, which have low biodiversity, will generally have a neutral or positive effect especially if they contain little or no semi-natural woodland habitat as opposed to a peatland or wet grassland which have a much higher biodiversity and contain more rare and specialised species (Iremonger *et al.* 2007). However, each case needs to be looked at in a landscape context as a particular habitat may have a lesser value in a landscape where similar habitats are common but may be significant within intensive agricultural landscapes.

**A standardised training and qualification system is required of the foresters and forest inspectors to ensure they are only allowing for appropriately located plantations that will not detract from the biodiversity value of the site, nor impact species or habitats of conservation interest.**

**Therefore, a systematic approach is needed where all sites proposed for afforestation are sufficiently assessed for their conservation interests to the extent that all arms of the state can be satisfied that biodiversity areas shall be protected and managed in keeping with the guidelines.** These site assessments should then provide the basis for suitable planning and design of the forest, including the selection of silvicultural system, retention and management of most appropriate open areas, and management practices that complement rather than counteract biodiversity conservation. For this a qualified ecologist needs to describe, evaluate and map habitats and species present on site and propose areas which should be retained within the site for biodiversity. This should also include relative importance of each site in the context of the landscape in which it is situated.

**1.1 Issues associated with different habitat types:**

In Ireland, afforestation tends to be carried out on one of three habitat types; namely wet grassland, improved grassland and peatland. Iremonger *et al.* (2007) carried out a study on these habitat types in relation to the effect of afforestation on biodiversity and showed that afforestation by coniferous trees changes the relative abundances of species on these sites due to three main factors: exclusion of grazing livestock, forestry drainage and changes in nutrient management. In general, open habitat specialist birds, specialist ground-dwelling spiders and stress tolerant and ruderal plants are the most impacted by these changes while more generalist species tend to benefit. However, this initial beneficial effect on certain species only lasts until the canopy closes after which they decline rapidly.

Afforestation in unenclosed, upland peat habitats is one important example of poor planning. These habitats can consist of heath or peatland which are both Annex I habitats under the EU Habitats Directive. These habitats are internationally important and contain unique plant and animal communities. In recent submission to the Convention on Biological Diversity, the majority of these site types were given an overall poor or bad status rating (NPWS 2010). These habitats were assessed on several different requirements including range, area, structure & functions (condition) and future prospects. A key threat to the viability of these important habitats was given as afforestation (NPWS 2010). Afforestation affects these habitats through several different methods. Requirements for successful afforestation necessitates deep-ploughing and extensive drainage which can disrupt water tables and surface flow patterns. This often leads to long term erosion and oxidation of peat as well as increased sediment loads in streams and lakes. Robinson & Blyth (1982) found that sediment yields over five years following drainage of an upland site were equal to the previous 50 years and loads remained approximately four times higher than pre-drainage levels due to increasing erosion.

The higher evapo-transpiration levels of the trees compared to open grassland causes the water table to lower still further and can change the soil structure. It can also lead to a heavy input of fertiliser and herbicides to the local water supply leading to pollution and alterations to the aquatic ecosystem which can have far reaching effects. As the tree cover becomes denser, species of open land become pushed out. Afforestation of uplands sites has been shown to halt breeding and cause desertion of sites by such birds such as Raven and Golden Eagle (Marquiss *et al.* 1978, Mearns 1983, Marquis *et al.* 1985). Birds such as Hen Harrier and Curlew, which are associated with these open areas, have shown significant declines in population over the last number of years (Burfield & von Bommel 2004). Changes in vegetation surrounding the plantation are also consistent with changes to the water table (Stroud *et al.* 1987). All of these factors are responsible for reducing the quality of the habitat for a wide range of species.

These upland sites often act as carbon sinks, storing carbon for long periods of time. Draining these areas leads to this carbon being released into the atmosphere. It has been suggested that short rotation conifer plantation may actually be a net emitter of greenhouse gases and more research needs to be done in order to establish how much, or how little, benefit these short rotation conifer plantations are in terms of carbon sequestration, especially in relation to soil type, release of carbon and methane from drained soils, energy and fertiliser inputs, biodiversity and ecosystem services, levels of atmospheric carbon dioxide, and comparison of various silvicultural systems. Ireland is a signatory to the Kyoto Protocol which states that we must reduce our carbon emissions and as such we are obliged to put in place mechanisms whereby emissions are reduced or removed.

1. **Opportunities for forestry:**

**2.1 Riparian woodland & Flood alleviation:**

**More research and policy development is required to determine the role of forestry in catchment management and flood alleviation in Ireland; in terms of the varying contribution of different species mixes and management systems, their location in the catchment, and comparison with flood alleviation services of other habitat types.** Riparian woodlands can also regulate and control stream flow, reduce the speed of run-off and slow water flow across floodplains, all of which can help to alleviate flooding, providing a large economic incentive. The planting of trees along watercourses can also help to improve water quality as they have the ability to trap and filter sediment and nutrients (both organic and inorganic) coming off the land. This could aid in achieving our water quality targets under the Water Framework Directive. Sediment and nutrient input can also impact aquatic biodiversity. Riparian planting can also help to stabilise banks and preventing collapse by binding soils and preventing erosion. Guidelines such as “*Native Riparian Woodlands – A Guide to Identification, Design, Establishment and Management*” published by Woodlands of Ireland (Little *et al.* 2008) can be looked at in order to design the most effective management strategy for specific sites.

Planting and restoration of floodplain and riparian woodland is likely to present the greatest opportunities for flood alleviation. These woodlands can also do much toward improving water quality through buffering aquatic ecosystems from influxes of excess sediment and nutrients, both of which are happening more due to the increasing frequency and severity of extreme weather events associated with climate change. In the UK, heavy coniferous afforestation has been shown to be higher potential problem for both groundwater reserves and maintenance of river flows than broadleaved woodlands, which may even enhance the supply in certain areas (Nisbet & McKay, Yr unknown, UK Forestry Commission).

Riparian woodlands can also increase biodiversity both within the stream as well as the woodland itself and they can act as an important shelter belt for wildlife, providing transport as well as food. They create a wide range of niches which would otherwise be absent including structurally, as well as altering the nutrient content and flow of sections of the watercourse and changing the light regime through shading. All of this helps to create new niches, increasing biodiversity.

* 1. **Strip planting:**

**Greater emphasis should be placed on alternative approaches and opportunities for afforestation to be of benefit of both the environment as well as the economy.** Methods such as planting strips of forestry across a wide range of areas, instead of large, isolated plantations can be hugely beneficial as they can act as wildlife corridors for animals such as birds and bats as well as terrestrial mammals such as Badgers and Pine Martens. These can act as **shelter** as well as transport corridors for these animals. This could help enhance biological connectivity between sites such as SACs and SPAs which are often scattered and isolated and allow populations of animals to mix. The trees could also be **harvested sustainably for firewood** which, if distributed locally, could act as a more environmentally friendly fuel alternative to turf or oil as they are considered to be carbon neutral and they also represent a continuous supply if harvested sustainably.

* 1. **Mixed Species Stands:**

**The use of mixed species stands provide a wide range of benefits, as opposed to the monospecific coniferous stands which are often chosen, thus mixed species stands should be planted as standard.** Mixed species stands are much less likely to be impacted by pests and thus would require less pesticide input than monospecific stands. Jactel *et al.* (2005) showed that the risk of pest damage can be 65% higher in monocultures compared to mixed stands. Mixed species stands can also be more productive and give greater yields than monocultures if designed correctly in order to take maximum advantage of light levels (Kelty 1992).

* 1. **Continuous Cover Forestry:**

**Continuous Cover Forestry should become the alternative to the practise of clearfelling,** which is widely practiced in the forestry industry. Continuous Cover Forestry is defined as the use of silvicultural systems whereby the forest canopy is maintained at one or more levels without clearfelling (Mason *et al.* 1999). This method of forest management, coupled with the use of mixed species stands, can create more diverse forests, both structurally and in terms of species composition. Two of the recommendations by the BIOFOREST project support this management technique:

*Recommendation 26: Create a mosaic of stands at different age and structure at the landscape scale.*

*Recommendation 27: Include a mixture of canopy species when planting.*

Continuous Cover Forestry can potentially provide a huge range of benefits. The mixed aged stand provides a greater diversity of habitats and niches than does the traditional monospecific even-aged conifer stands. A recent study has also highlighted how Continuous Cover Forestry can assist in mitigating many of the risks which are posed by climate change to forestry, including increased incidence of heavy winter rainfall and attacks by pests and disease (Stokes & Kerr 2009).

Simple measures such as having open spaces within the plantation can have positive effects on the biodiversity of a plantation (Iremonger *et al.* 2007). Increasing the width of strips of open spaces along forest roads has also been shown to increase bird diversity within the plantation (Iremonger *et al.* 2007). Open spaces containing broadleaved trees are also beneficial for wildlife and plants as well as the inclusion of some wet habitat features such as wet flushes or temporary streams. Areas of high biodiversity within the site or areas containing unique or rare flora or fauna should be chosen for conversion to open space or wet habitat.

Continuous Cover Forestry should be promoted to foresters as an alternative to monospecific stands. However, the lack of relevant skills required to transform existing forest stands to Continuous Cover Forestry represents a challenge. **Support needs to be given to foresters in terms of training, advice and support for continuous cover management methods as well as active incentives and new grant structures for new planting of Continuous Cover Forestry stands.** A research programme may need to be developed into the best use of Continuous Cover Forestry in Ireland according to forest, soil and landscape types.

Improved training and advice needs to be given to farm foresters in relation to the range of silvicultural systems available; species selection and mixes; appropriate pruning, thinning, and management; improving timber quality and value; support for achieving FSC certification; support for the establishment of group management and certification schemes; heritage and natural environment management considerations; and identifying markets for timber and non forest timber products. Initiatives such as the Welsh Coed Cymru should be looked to as examples of systems which can improve the economic viability of native woodlands by encouraging the use of local timber produced from sustainably managed woodland.

* 1. **Agroforestry**

**More research and policy development into the practice of agroforestry within Ireland is required.** Agroforestry involves planting at least one tree species alongside crops which can result in ecological and economic interactions between the two components (Palma *et al*. 2007). Such systems were previously common in Europe but have declined in recent decades due to intensification of agriculture (Eichhom *et al*. 2006).

Agroforestry can potentially have a huge number of benefits for farmers including increasing soil fertility, water management, provide shelter and transport corridors for wildlife and provide fuel. Increased trees will also help alleviate flooding as the trees have the ability to absorb surplus water and release it slowly. This can be combined with riparian planting which can help reduce the incidences of flooding. Riparian planting can also act as a buffer zone and can help to prevent run-off into rivers and waterbodies thereby reducing losses of water, nutrients, organic matter and soil material. Palma *et al.* (2007) showed that agroforestry can reduce erosion by up to 65% and Nitogen leaching can be reduced by up to 28%. Planting along borders of fields can act as a windbreak which can improve crop yield by preventing toppling of the crops in strong winds and reduce drying of the crop. Trees can also provide welcome shade for livestock in the summer months, thereby reducing stress and dehydration.

The development of agroforestry would also impact positively on Irelands standing within the EU as it would contribute to satisfying Irelands current breaches of the Birds Directive, Habitats Directive and Water Framework Directive by improving biodiversity and water management as well as climate change and renewable energy if the firewood is harvested sustainably for local use.

1. **Incentives:**

The approach taken towards forestry management in Ireland needs to change. Forestry has the ability to assist climate change adaptation and increase biodiversity in a number of ways, including by creating woodland habitats which increase ecological connectivity at the landscape level; by flood alleviation functions of some woodland types; and by improving water quality and reducing soil erosion. However, the current clearfell and replant systems, which are primarily composed of monospecific stands of exotic species and are dependent on heavy inputs of fertilisers and pesticides, often do the opposite by contributing much to water pollution and sedimentation of aquatic ecosystems and by draining wetlands that provide flood alleviation services.

**Greater emphasis should be placed on schemes such as the Native Woodland Scheme, especially with regards to riparian broadleaf woodlands which provide a huge range of benefits, both ecological and economic.**

**The development of markets for locally grown timber products is vital to ensure that these woodlands have a positive economic base in order to ensure their continued management.** The success of the Welsh Coed Cymru initiative should be looked at as an example of this.

Subsidies for increasing forest cover in Ireland should not be justified by carbon store, but for reasons other than this, especially with respect to short rotation stands subject to clearfell and replant regime whose long term impact on climate change is unknown. Subsidies should focus on forestry systems which have proven climate change mitigation credentials.

**Forestry owners should be given incentives to establishing forest owner organisations.** According to the Irish Farmers Association “*A Practical Guide to Establishing a Forest Owner Organisation*” many forestry owners own small and fragmented forests with the average holding in the private forest sector being 9 hectares. These smaller forests present a greater challenge to sustainable management as they have higher costs due to the high cost of harvesting and transportation despite the low volume of timber. If forest owners collaborated, the cost of management of the forests could thus be shared creating a more sustainable and energy efficient system.

**Viable alternatives to afforestation and support mechanisms for positive land management are crucial for the success of improved biodiversity screening and cessation of planting on high nature value farmland.** The Heritage Council’s ‘Policy Paper on Forestry and the National Heritage’ (1999) states that "Sites of high nature conservation value on farmland should not be planted, and landowners should receive sufficient payment to manage these areas for their continued heritage value".

Initiatives such as the “One Million Trees in One Day” should be looked to as simple methods for increasing sustainable afforestation in Ireland. “One Million Trees in One Day” is an environmental not-for-profit initiative which aims to plant a million young native trees at sites across both the Republic of Ireland and Northern Ireland in a 24 hour period in order to establish trees and woodlands across the island which will be present for many years and may provide beneficial ecosystem services.

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